FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

March 15 to March 21, 2015 (week 11)

Overall Summary

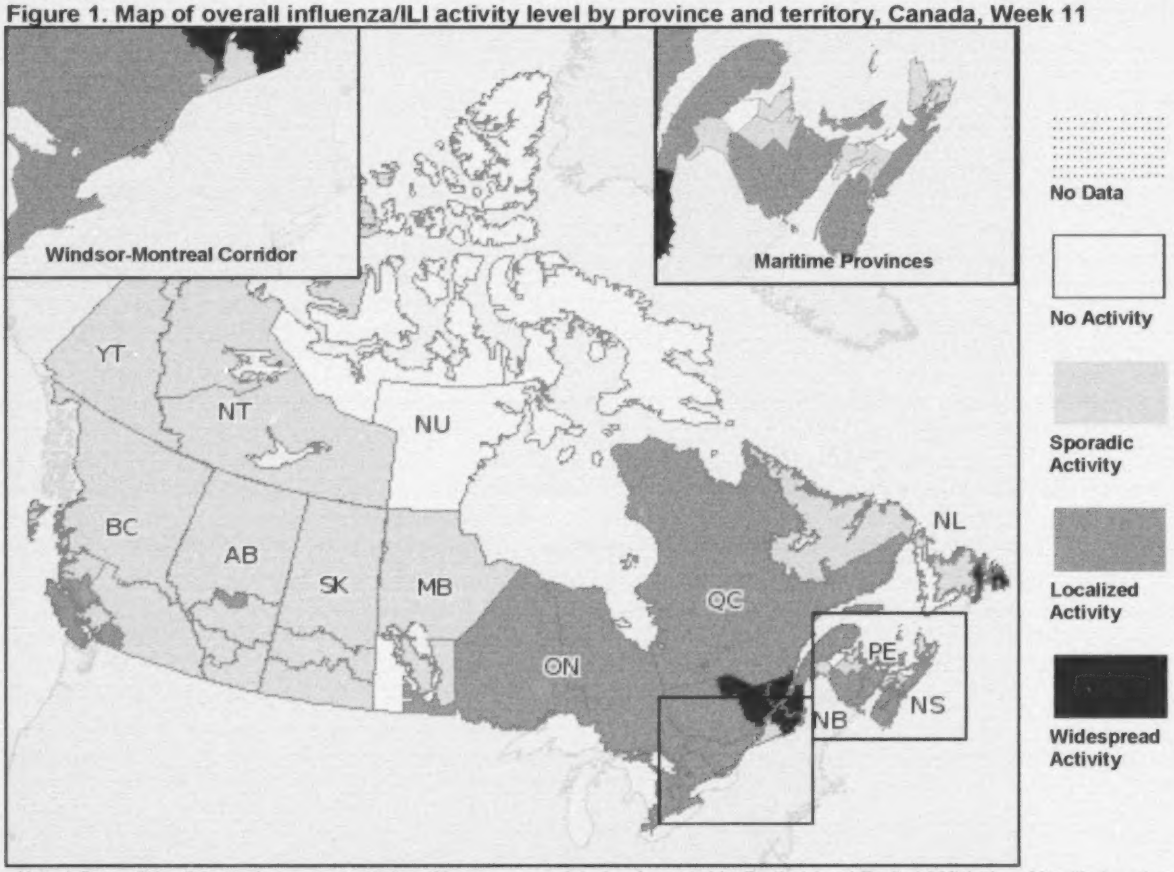
- The majority of influenza activity is occurring in the Central and Atlantic provinces.
- Influenza B detections continue to increase steadily across Canada while detections of influenza A continues to steadily decrease. This increase in influenza B is expected as influenza B often shows up later in the flu season.
- Despite the late-season circulation of influenza B, influenza A(H3N2) remains the most common influenza virus detected this season to date and seniors continue to be affected.
- Evidence from the National Microbiology Laboratory (NML) indicates that this year's vaccine will continue to provide protection against the circulating A(H1N1) and B strains.

Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2014-15 influenza season? Contact us at FluWatch@phac-aspc.gc.ca

Influenza/ILI Activity (geographic spread)

In week 11, four regions reported widespread activity: QC(3) and NL. Twenty-two regions reported localized activity: BC(2), AB, MB, ON(7), QC(2), NB(3), NS(5) and PE. Twenty-four regions reported sporadic activity: in YK, NT(2), BC(3), AB(4), SK(3), MB(2), QC, NB(3), NS(3), and NF(2). No activity was reported in eight regions : NU(3). MB(2), NB, NS, and NL.

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 11

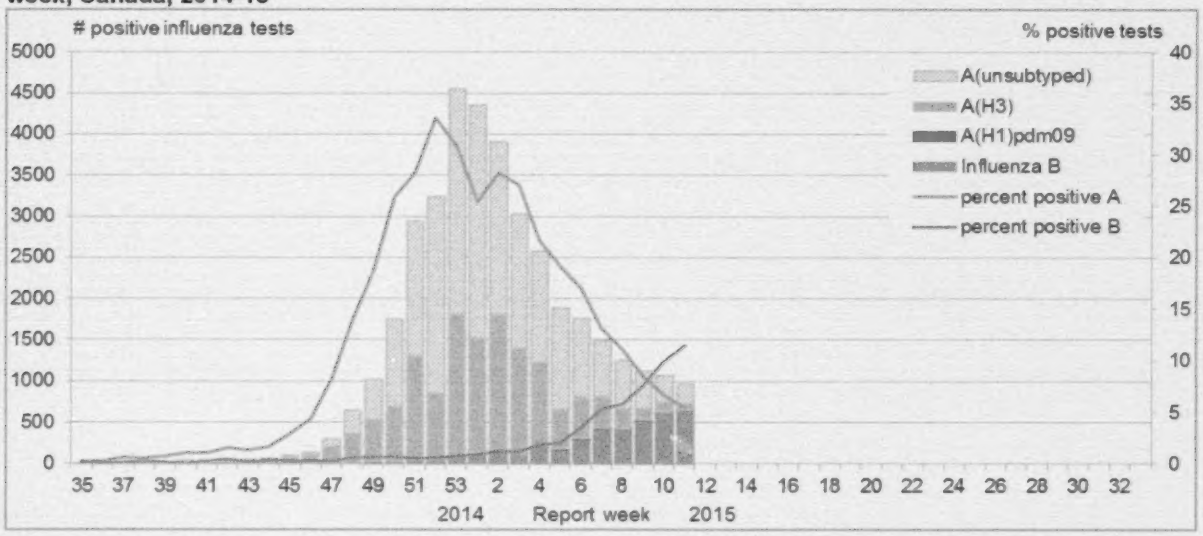


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

In week 11, the number of positive influenza tests (958) and the percentage positive for influenza A (5.4%) continued to decline from the previous week (Figure 2). The percentage of positive influenza B tests continued to increase and was 11.5% in week 11. Influenza B detections were greater than influenza A detections in many provinces (BC, AB, SK, MB, QC, PE and NS). To date, 89% of influenza detections have been influenza A, and 99.4% of those subtyped have been A(H3N2) (Table 1). To date this season, detailed information on age and type/subtype has been received for 33,253 cases (Table 2). Adults ≥65 years of age have predominantly been affected by influenza A, accounting for 62% of influenza A detections. Influenza B, while much smaller in numbers, is mainly affecting individuals less than 65 years of age, accounting for 60% of influenza B detections.

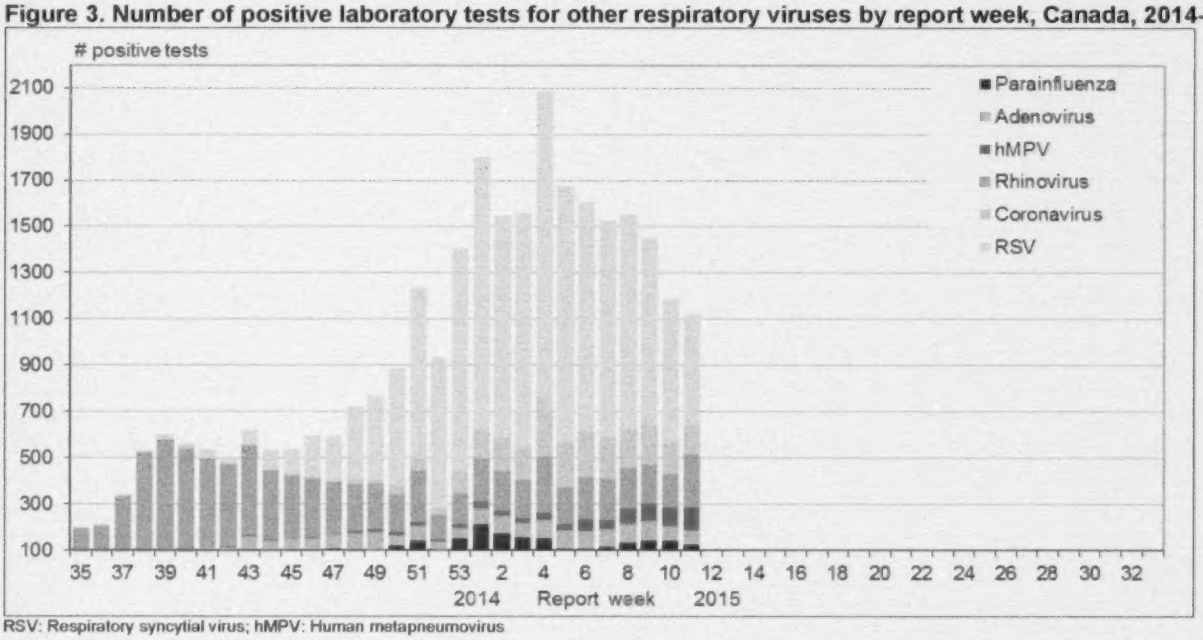
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2014-15



In week 11, detections for all other respiratory viruses remained similar to, or decreased from, the previous week, except those for rhinovirus (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2014-15



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2014-15

Reporting provinces[1]	Weekly (March 15 to March 21, 2015)					Cumulative (August 24, 2014 to March 21, 2015)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	10	0	0	10	38	3462	25	2584	853	265
AB	14	0	11	3	78	3662	13	3497	152	609
SK	0	0	0	0	10	1306	0	837	469	108
MB	0	0	0	0	11	1118	0	388	730	72
ON	138	3	46	89	98	10854	39	4561	6254	494
QC	81	0	0	81	318	11289	4	422	10863	2209
NB	38	0	10	28	36	1042	0	164	878	176
NS	14	0	0	14	53	464	0	123	341	180
PE	4	0	4	0	3	120	1	117	2	26
NL	11	0	0	11	3	603	0	53	550	13
Canada	**310**	**3**	**71**	**236**	**648**	**33920**	**82**	**12746**	**21092**	**4152**
Percentage[2]	32.4%	1.0%	22.9%	76.1%	67.6%	89.1%	0.2%	37.6%	62.2%	10.9%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2014-15

Age groups (years)	Weekly (March 15 to March 21, 2015)					Cumulative (August 24, 2014 to March 21, 2015)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	13	0	2	11	33	2059	17	801	1241	267	2326	7.0%
5-19	6	1	4	1	30	1757	6	946	805	430	2187	6.6%
20-44	18	0	3	15	68	3388	16	1644	1728	592	3980	12.0%
45-64	24	0	1	23	114	3803	17	1626	2160	944	4747	14.3%
65+	105	1	16	88	227	18419	12	7143	11264	1471	19890	59.8%
Unknown	1	0	1	0	0	120	0	99	21	3	123	0.4%
Total	167	2	27	138	472	29546	68	12259	17219	3707	33253	100.0%
Percentage[2]	26.1%	1.2%	16.2%	82.6%	73.9%	88.9%	0.2%	41.5%	58.3%	11.1%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Antiviral Resistance

During the 2014-2015 influenza season, the NML has tested 1,024 influenza viruses for resistance to oseltamivir and 1,021 influenza viruses for resistance to zanamivir. All viruses were sensitive to zanamivir and one influenza A(H3N2) virus was resistant to oseltamivir. A total of 1,223 influenza A viruses (99.9%) were resistant to amantadine (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2014-15

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	811	1	809	0	1218	1217 (99.9%)
A (H1N1)	6	0	5	0	6	6 (100%)
B	207	0	207	0	NA[1]	NA[1]
TOTAL	1024	1	1021	0	1224	1223

[1]NA: Not Applicable

Influenza Strain Characterizations

During the 2014-2015 influenza season, the National Microbiology Laboratory (NML) has characterized 414 influenza viruses [174 A(H3N2), 5 A(H1N1) and 235 influenza B].

Influenza A (H3N2): When tested by hemagglutination inhibition (HI) assay (n=174), one virus was antigenically similar to A/Texas/50/2012, five showed reduced titers to A/Texas/50/2012 and 168 were antigenically similar to A/Switzerland/9715293/2013, which is the influenza A(H3N2) component recommended for the 2015 Southern Hemisphere influenza vaccine. Additionally, 971 A(H3N2) viruses were unable to be tested by HI assay; however, sequence analysis showed that 969 belonged to a genetic group that typically shows reduced titers to A/Texas/50/2012. **Influenza A(H1N1):** Five A(H1N1) viruses characterized were antigenically similar to A/California/7/2009. **Influenza B:** Of the 235 influenza B viruses characterized, 225 viruses were antigenically similar to B/Massachusetts/2/2012, three viruses showed reduced titers against B/Massachusetts/2/2012, and seven were B/Brisbane/60/2008-like (Figure 4).

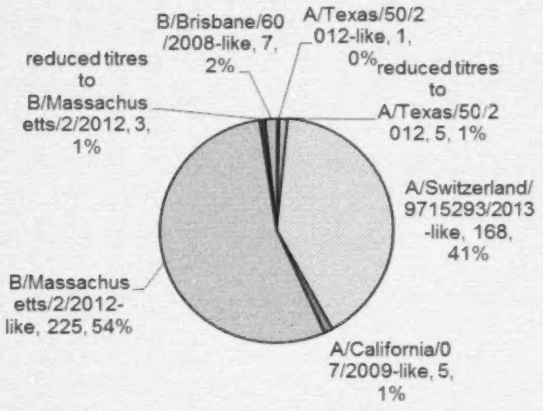

B/Brisbane/60 /2008-like, 7, 2%
A/Texas/50/2 012-like, 1, 0%
reduced titres to B/Massachus etts/2/2012, 3, 1%
reduced titres to A/Texas/50/2 012, 5, 1%
A/Switzerland/ 9715293/2013 -like, 168, 41%
B/Massachus etts/2/2012- like, 225, 54%
A/California/0 7/2009-like, 5, 1%

Figure 4. Influenza strain characterizations, Canada, 2014-15, N = 414

The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

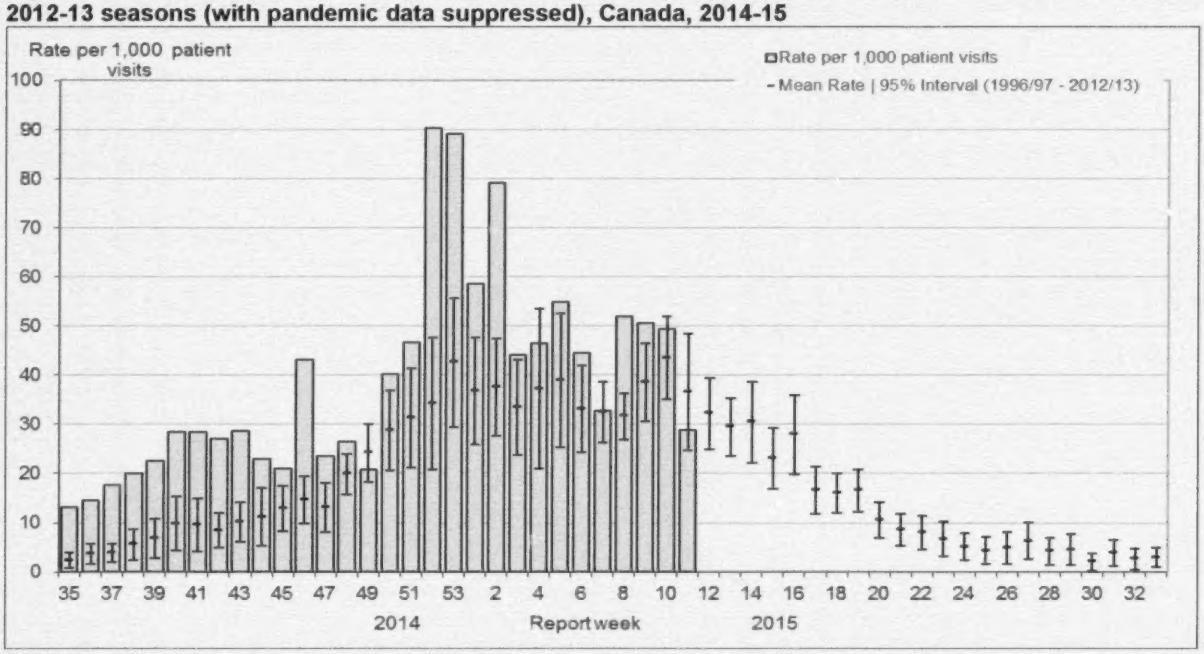
The recommended components for the 2014-2015 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A/Texas/50/2012 (H3N2)-like virus, and a B/Massachusetts/2/2012-like virus (Yamagata lineage). For quadrivalent vaccines, the addition of a B/Brisbane/60/2008-like virus is recommended.

The WHO has released the recommended composition of the influenza vaccine for the northern hemisphere for the 2015-2016 season. Trivalent vaccines are recommended to contain 1) an A/California/7/2009 (H1N1)pdm09-like virus 2) an A/Switzerland/9715293/2013 (H3N2)-like virus, and 3) an B/Phuket/3073/2013-like virus(Yamagata lineage). Quadrivalent vaccines are recommended to additionally contain a B/Brisbane/60/2008-like virus (Victoria lineage).

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate decreased in week 11 to 28.9 consultations per 1,000, which is within expected levels (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2014-15

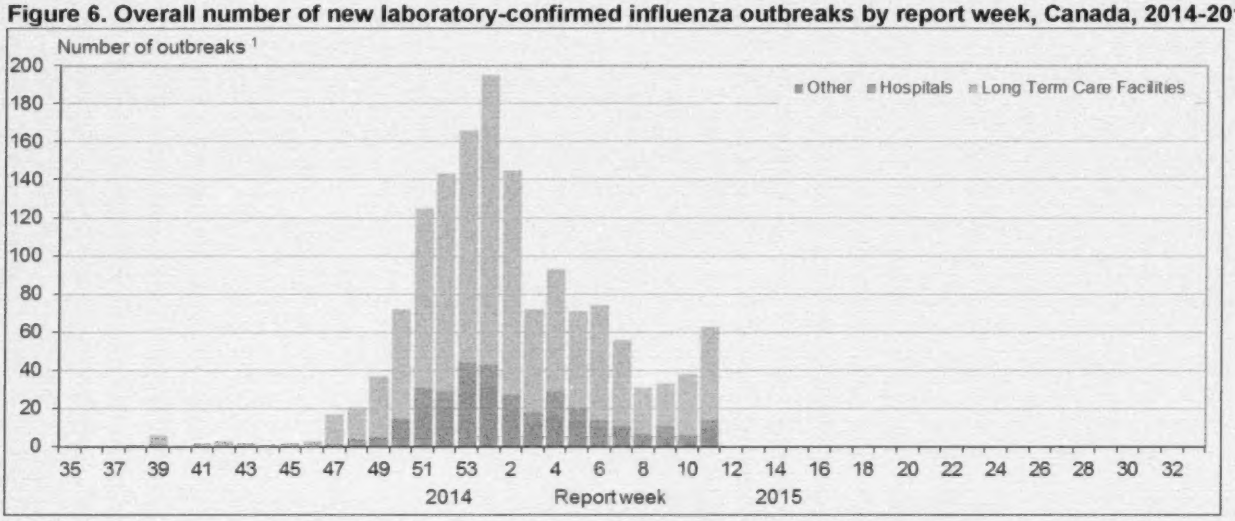


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 11, 63 new outbreaks of influenza were reported. The majority of the outbreaks occurred in the Central and Atlantic provinces. Forty-nine outbreaks were reported in long-term care facilities (LTCF), five in hospitals and nine in institutional or community settings (Figure 6). An additional two outbreaks of ILI were reported in schools. Among the outbreaks in which the influenza subtype was known (n=11), ten outbreaks were associated with influenza B (one in a hospital, seven in LTCFs, and two in an institutional or community setting). To date this season, 1,142 outbreaks in LTCFs have been reported and the majority of those with known subtypes were attributable to A(H3N2). There have been a higher number of reported influenza outbreaks to date this season compared to the same period in previous seasons.

Figure 6. Overall number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2014-2015

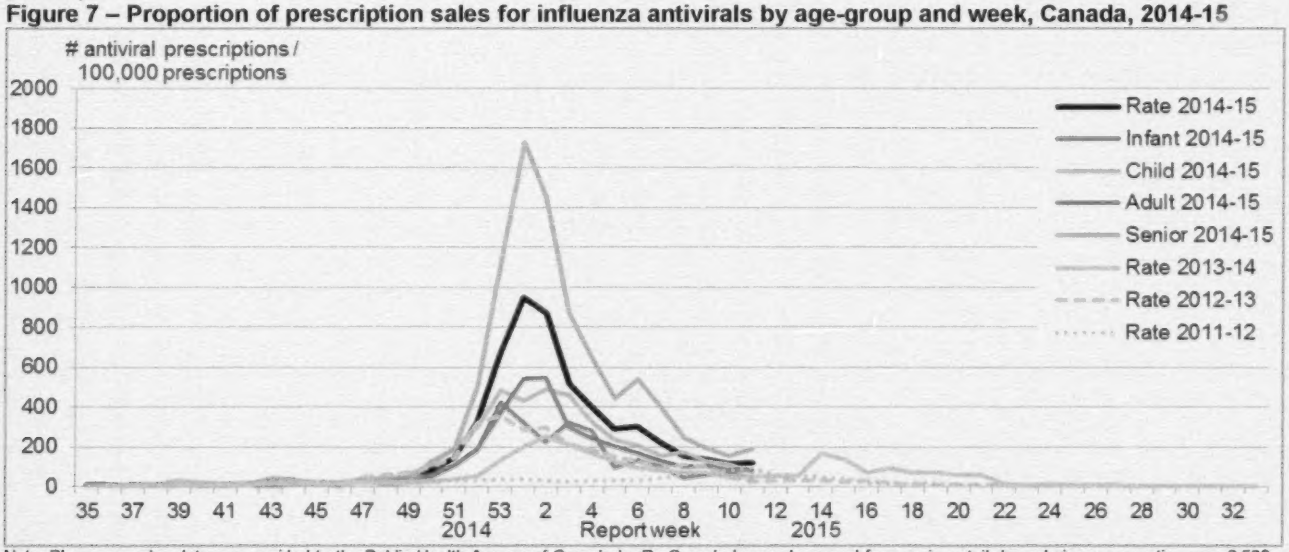


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

During week 11, the proportion of prescriptions for antivirals was 119.1 antiviral prescriptions per 100,000 total prescriptions which was similar to the previous week. The rate for antivirals since week 48 has been higher than the previous three seasons (Figure 7). The rate in all age groups except seniors decreased in week 11. The rate was highest among seniors at 189.5 per 100,000 total prescriptions and lowest among infants at 50.5 per 100,000 total prescriptions.

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2014-15



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 11, 14 laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network: five cases of influenza A and nine cases of influenza B (Figure 8a). A greater proportion of cases have been reported with influenza B in recent weeks, following the trend in laboratory detections. Among the reported cases, three (21%) were <2 years of age, ten (71%) were 2 to 9 years of age and one (7%) was 10-16 years of age. One ICU admission was reported.

To date this season, 595 hospitalizations have been reported by the IMPACT network, 502 (84%) of which were cases of influenza A. Among cases for which the influenza A subtype was reported, 99% (163/165) were A(H3N2) (Table 4). To date, 74 cases were admitted to the ICU, of which 39 (53%) were 2 to 9 years of age (Figure 9a). A total of 49 ICU cases reported to have at least one underlying condition or comorbidity. Three deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 11, 28 laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network. Among the cases in week 11, 20 cases (74%) were in adults over the age of 65 and 18 cases (67%) had influenza B (Figure 8b).

To date this season, 2,009 cases have been reported; 1,852 (92%) with influenza A. The majority of cases (82%) were among adults ≥65 years of age (Table 5). One hundred and forty nine ICU admissions have been reported and 112 cases were adults ≥65 years of age. A total of 107 ICU cases (72%) reported to have at least one underlying condition or comorbidity. Of the 114 ICU cases with known immunization status, 37 (32%) reported not having been vaccinated this season. One hundred and seventeen deaths have been reported, 107 (92%) of the deaths were adults >65 years of age (Figure 9B).

Note: The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2014-15

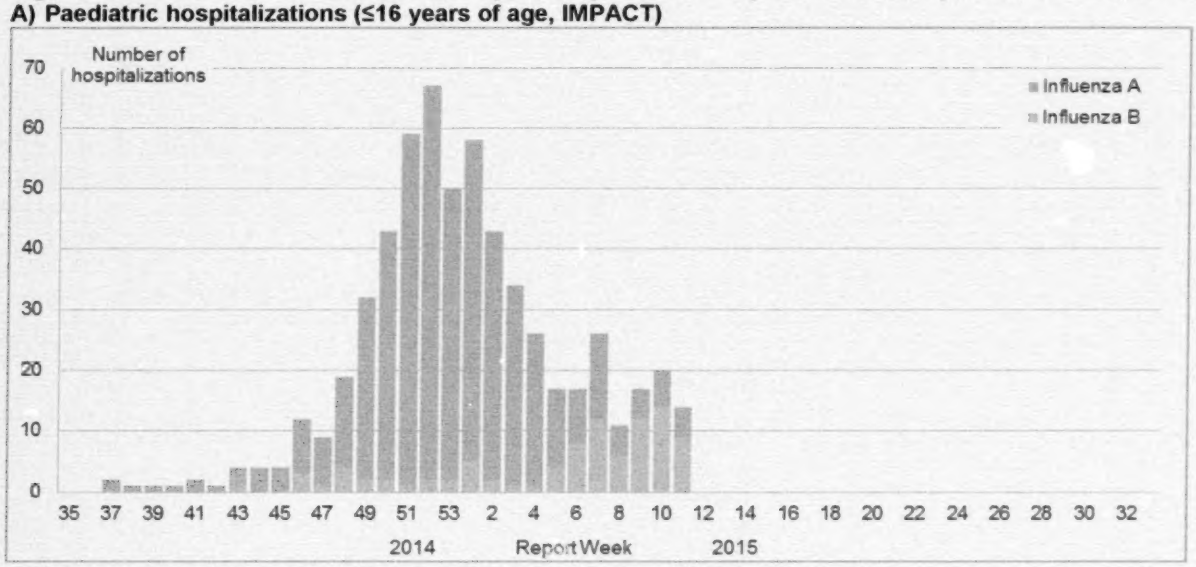
Age groups	Cumulative (24 Aug. 2014 to 21 Mar. 2015)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	81	0	18	63	6	87 (14.6%)
6-23m	109	1	35	73	24	133 (22.4%)
2-4y	122	1	40	81	23	145 (24.4%)
5-9y	130	0	45	85	25	155 (26.1%)
10-16y	60	0	25	35	15	75 (12.6%)
Total	502	2	163	337	93	595
% [1]	84.4%	0.4%	32.5%	67.1%	15.6%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2014-15

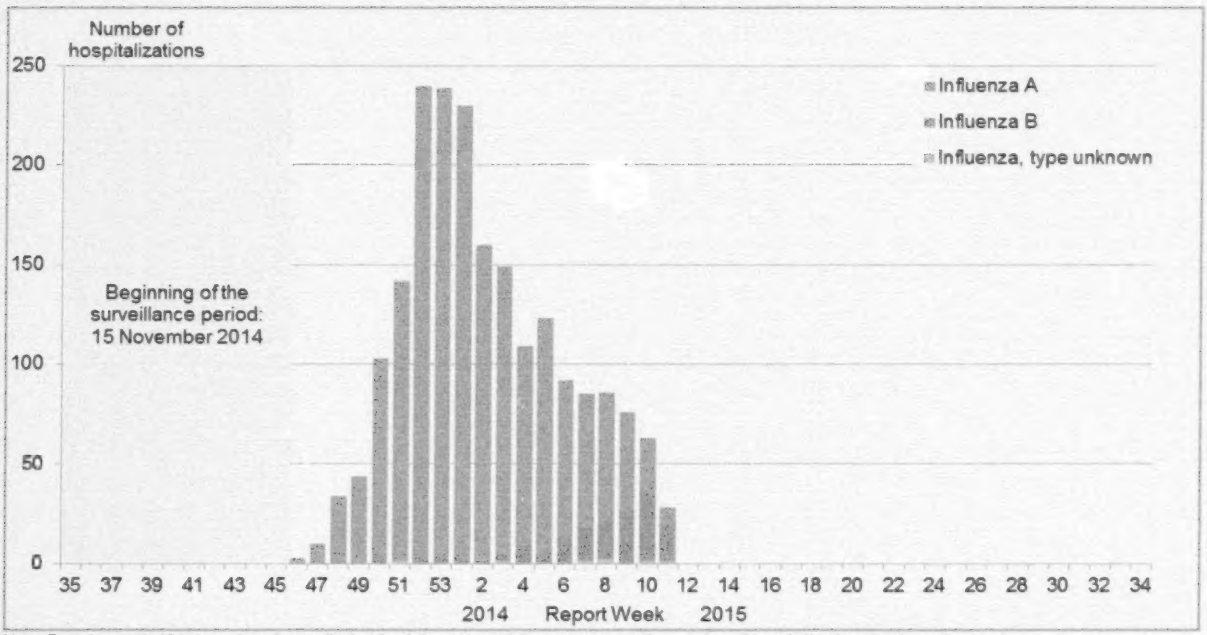
Age groups (years)	Cumulative (15 Nov. 2014 to 21 March 2015)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	3	0	1	2	1	4 (%)
20-44	104	1	48	55	8	112 (6%)
45-64	214	0	89	125	38	252 (13%)
65+	1531	3	661	867	110	1641 (82%)
Total	1852	4	799	1049	157	2009
%	92%	0%	43%	57%	8%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2014-15
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



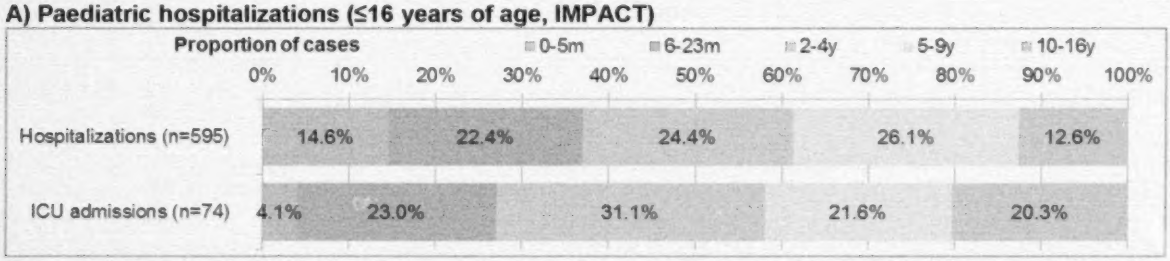
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



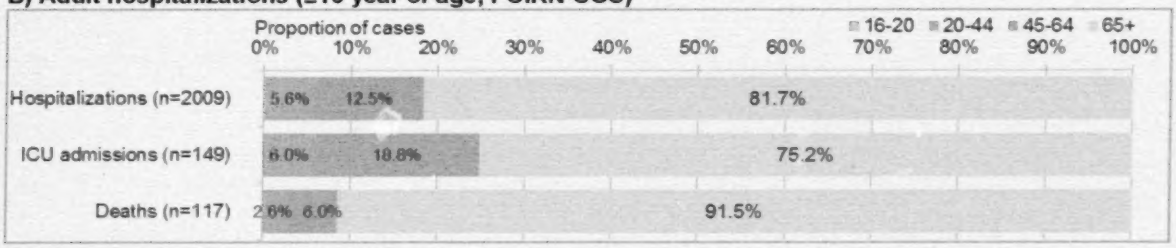
Note: Data for week 46 is based on data collected for 1 day only and do not represent the number of hospitalizations for the entire week.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2014-15

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 11, 148 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories* which is slightly more than the number reported in week 10 (n=139). Of the 148 hospitalizations, all but 49 were due to influenza A, and 67% were in patients ≥65 years of age.

Since the start of the 2014-15 season, 6,249 hospitalizations have been reported; 5,877 (95%) with influenza A. Among cases for which the subtype of influenza A was reported, 99.5% were A(H3N2). The majority of cases (71%) were ≥65 years of age (Table 6). A total of 321 ICU admissions have been reported to date: 54% (n=172) were in adults ≥65 years of age and 32% (n=102) were in adults 20-64 years. A total of 462 deaths have been reported since the start of the season: three children <5 years of age, three children 5-19 years, 38 adults 20-64 years, and 418 adults ≥65 years of age. Adults 65 years of age or older represent 90% of all deaths reported this season. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2014-15

Age groups (years)	Cumulative (24 Aug. 2014 to 21 Mar. 2015)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	389	2	139	248	28	417 (7%)
5-19	259	2	127	130	43	302 (5%)
20-44	364	3	218	143	43	407 (7%)
45-64	547	4	226	317	52	599 (10%)
65+	4262	2	1958	2302	191	4453 (71%)
Unknown	56	1	52	3	15	71 (1%)
Total	5877	14	2720	3143	372	6249
Percentage[1]	94.0%	0.2%	46.3%	53.5%	6.0%	100.0%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2014-15 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Since the last FluWatch report, no new laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus were reported by the World Health Organization. Globally to March 26, 2015, the WHO reported a total of 631 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 221 deaths. Documents related to the public health risk of influenza A(H7N9), as well as guidance for health professionals and advice for the public is updated regularly on the following websites:

PHAC – Avian influenza A(H7N9)

WHO – Avian Influenza A(H7N9)

Influenza A(H5N6): Since the last FluWatch report, no new cases of human infection with avian influenza A (H5N6) virus from China has been reported by the World Health Organization. Globally to March 26, 2015, the WHO has been informed of a total of three cases of avian influenza A (H5N6) virus, including two deaths.

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Since the last FluWatch report, 15 new laboratory-confirmed cases of MERS-CoV have been reported by the World Health Organization. Globally, from September 2012 to March 26, 2015, the WHO has reported a total of 1,090 laboratory-confirmed cases of infection with MERS-CoV, including 412 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East. The public health risk posed by MERS-CoV in Canada remains low (see the PHAC Assessment of Public Health Risk) and for the latest global risk assessment posted by the WHO on February 5, 2015: WHO MERS-CoV

Documents related to the public health risk of MERS-CoV, as well as guidance for health professionals and advice for the public is updated regularly on the following websites:

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)

WHO – Coronavirus infections

Avian Influenza A(H5)

Surveillance by the CFIA has not detected the H5N2 and H5N1 strains of the virus in domestic poultry since February 2, 2015. *CFIA - Notifiable Avian Influenza*

For the latest Travel Health Notice on Avian Influenza (H5N1) visit the following webpage: PHAC – Travel Health Notice

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2014-2015 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

** More than just sporadic as determined by the provincial/territorial epidemiologist.*

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.